

CLAIMS

1. A solid-state image pickup device comprising a plurality of photoelectric conversion elements and a plurality of switching elements, characterized in
5 that the photoelectric conversion element is formed above at least one switching element, and a shielding electrode layer is disposed between the switching elements and the photoelectric conversion elements.

2. A solid-state image pickup device according
10 to claim 1, wherein one photoelectric conversion element and one or more switching elements are disposed in one pixel.

3. A solid-state image pickup device according to claim 1 or 2, wherein the photoelectric conversion
15 element has a photoelectric conversion layer, and the photoelectric conversion layer includes an insulating layer, a semiconductor layer, and a high impurity concentrated semiconductor layer.

4. A solid-state image pickup device according
20 to claim 1 or 2, wherein the photoelectric conversion element has a photoelectric conversion layer, and the photoelectric conversion layer includes a first high impurity concentrated semiconductor layer of one conductivity type, a semiconductor layer, and a
25 second high impurity concentrated semiconductor layer of a conductivity type opposite to the one conductivity type of the first high impurity

concentrated semiconductor layer.

5. A solid-state image pickup device according to any one of claims 1 to 4, wherein the shielding electrode layer is not formed above a signal line
5 connected to one of a source electrode and a drain electrode of the switching element.

6. A solid-state image pickup device according to any one of claims 1 to 5, wherein the shielding electrode layer is held at a constant electric
10 potential.

7. A solid-state image pickup device according to claim 6, wherein the shielding electrode layer is grounded.

8. A solid-state image pickup device according to any one of claims 1 to 7, wherein each of the
15 switching elements is constituted by a TFT, and the shielding electrode layer is disposed so as to cover an upper portion of a channel of each of the TFTs.

9. A solid-state image pickup device according to claim 8, wherein the shielding electrode layer has
20 a width equal to or smaller than a channel width of the TFT and is disposed so as to cross a TFT driving wiring.

10. A solid-state image pickup device according to any one of claims 1 to 9, wherein the shielding
25 electrode layer is made of a high melting point metal.

11. A solid-state image pickup device according

to claim 10, wherein the shielding electrode layer is made of molybdenum (Mo), chromium (Cr), titanium (Ti), tungsten (W), or molybdenum-tungsten (MoW).

12. A solid-state image pickup device according to claim 1, wherein the shielding electrode layer is an electrode layer thinner than each of a gate electrode layer, a source/drain electrode layer, and a sensor biasing electrode layer.

13. A solid-state image pickup device according to claim 1, wherein the solid-state image pickup device includes a gate electrode layer, a gate insulating layer, a first amorphous semiconductor layer, a first n type semiconductor layer, a source/drain electrode layer, a first interlayer insulating layer, the shielding electrode layer, a second interlayer insulating layer, a sensor lower electrode layer, an insulating layer, a second amorphous semiconductor layer, a second n type semiconductor layer, a transparent electrode layer, and a sensor biasing electrode layer.

14. A solid-state image pickup device according to claim 13, wherein one photoelectric conversion element and one or more TFTs are disposed in one pixel.

15. A radiation image pickup device, characterized in that a wavelength conversion unit is disposed above the photoelectric conversion element

in the solid-state image pickup device as claimed in any one of claims 1 to 9.

16. A radiation image pickup device according to claim 15, wherein one photoelectric conversion
5 element and one or more switching elements are disposed in one pixel.

17. A radiation image pickup device comprising a radiation conversion layer for directly converting radiation into electric charges, and a plurality of
10 switching elements, characterized in that the radiation conversion layer is formed above one or more switching elements, and a shielding electrode layer is disposed between the switching elements and the radiation conversion layer.

18. A radiation image pickup device according to claim 17, wherein the radiation image pickup device includes a gate electrode layer, a gate insulating layer, a first amorphous semiconductor layer, a first n type semiconductor layer, a
20 source/drain electrode layer, a first interlayer insulating layer, the shielding electrode layer, a second interlayer insulating layer, a sensor lower electrode layer, a radiation conversion layer, and a sensor biasing electrode layer.